

NASA Briefs

JSC scientist's experiment to fly on Mars Surveyor 2001

NASA has selected additional instruments for the Mars Surveyor 2001 missions, which will study Mars' environment. The Mars Surveyor 2001 missions will follow two other robotic Mars missions to be launched in late 1998 and early 1999. All are part of NASA's long-term, systematic exploration of Mars in which two missions are launched to the planet approximately every 26 months. The Martian Radiation Environment Experiment will characterize the radiation environment in orbit and on the surface of Mars simultaneously. This experiment will consist of radiation spectrometers on both the Mars 2001 Orbiter and on the Mars 2001 Lander. JSC's Dr. Guatam Badhwar is the principal investigator. The Mars Environmental Compatibility Assessment will characterize Martian dust and soil to identify potential undesirable and harmful interactions with human explorers and associated hardware, and to evaluate properties of the soil related to its use as a construction material. The 2001 missions represent the first step in a NASA initiative to integrate the requirements for Space Science and the Human Exploration and Development of Space program into a single robotic exploration program for the next millennium.

Lunar Prospector in final mapping orbit around Moon

The Lunar Prospector spacecraft has been placed successfully into what might be termed its "final mapping orbit," according to the Mission Control Center at Ames Research Center. Trim maneuvers placed the spacecraft into a 99 by 100 kilometer orbit, with a polar inclination of 90 degrees and a period of 118 minutes. Mission operations personnel will fire the spacecraft thrusters at periodic intervals to reboost the vehicle to its desired, circular mapping orbit. Engineers believe Lunar Prospector will remain within the mapping orbit limits for about two weeks before any adjustment burns are necessary. Since one of the mission experiments is designed to provide more information about the gravity model of the Moon, the time required between burn maneuvers was uncertain. MCC personnel will be gaining knowledge on this aspect of the operation as the Lunar Prospector mission progresses.

Glenn to perform aging research in space

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leged," Glenn said at the NASA Headquarters news conference in which the announcement was made. "The important thing is the opportunity that this gives to take us in some new directions in research."
Since aging and space flight share a number of similar physiological responses, the study of space flight may provide a model system to help scientists interested in understanding aging. Some of these similarities include bone and muscle loss, balance disorders, and sleep disturbances. Space biomedical researchers and gerontologists

believe more research in these areas could help older people live more productive lives, and could reduce the number of individuals requiring long-term medical care in their later years.
Glenn has been a catalyst in promoting the use of space flight for the benefit of healthy and productive aging.
The human research on this mission will be conducted by NASA and the national Institute on Aging, part of the National Institutes of Health. The research was peer reviewed by independent scientists, and includes studies on sleep disorders, muscle atrophy, balance, and clinical evaluations

of blood and heart function.
"The research on this mission will contribute to building our knowledge and understanding of the aging process," said Dr. Richard Hodes, director of the National Institute on Aging. "The data collected will be used to conduct continued research on how aging affects sleep cycles, muscle deterioration, and balance."
Dr. Michael DeBakey, Chancellor Emeritus of Baylor College of Medicine, who reviewed the medical data on Glenn, said he sees "no evidence to prevent him from going into space. Flying Senator Glenn offers important opportunities to study the

effects of the space environment on aging systems as has never been done in the past."
Before NASA made the decision to fly Glenn, the senator underwent a battery of medical tests conducted by NASA physicians and by independent consultants. They all found him medically qualified for space flight. According to NASA flight surgeons, Glenn's fitness level is excellent.
"We have 42 years of medical history on Senator Glenn and we were able to perform an exhaustive medical evaluation," said Dr. Denise Baisden, a NASA flight surgeon. "He is medically qualified to fly."



BLOOD DRIVE- Nestor Gonzalez of St. Luke's Episcopal Hospital Blood Donor Center prepares to tap into JSC employee Ragan Edmiston for a donation of platelets during the first JSC On-Site Blood Drive of the year. JSC employees continued to share their generosity by increasing the community's blood supply with 379 total blood donations, a 17 percent increase over last year's first drive. Dan Mangieri, co-chairman of the Blood Drive Committee, said the next on-site drive is March 31 and April 1.

Spring softball registration begins this month

Registration for the Gilruth Recreation Center Spring Softball Leagues will begin Monday and end Feb. 20.
Games will begin the week of March 2. Gilruth Center policy requires every player to have a pictured Gilruth Center Badge or a Blue Outside Player Badge in their possession at all times.

Only official and completed rosters will be accepted during sign-ups. Full payment of fees are due at the time of sign-ups. Cost is \$275 per team for competitive leagues, or \$200 per team for recreational leagues. For more information, call x33345.

Thomas to close out Phase 1 presence on Mir

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gifts and formal welcoming remarks. Thomas will be the final American to live and work aboard Mir as part of the Phase 1 Program of shuttle-Mir dockings and crew exchanges designed to promote engineering, operations and cultural exchanges between the U.S. and Russia prior to construction of the International Space Station.
A fit and leak check of the pressure suit, known as a Sokol suit, had to be accomplished prior to the official transfer of Thomas to Mir, but Thomas encountered difficulty in getting his suit to fit properly and reported it would not fit over his head. Later, he completed a leak and pressure check wearing Wolf's suit, and after lengthy

discussions between U.S. and Russian flight controllers, a joint decision was made to allow Thomas to move over to the Mir. Although Wolf's suit is a little large for Thomas, especially in the arms, it is considered safe to use in the event the Soyuz capsule must depart the Mir because of an emergency. The crew transfer took place at about 5:35 p.m. CST Sunday.
Transfer of hardware and supplies to and from the Mir space station began the prime order of business after the crew exchange. *Endeavour* ferried more than 7,000 pounds of equipment and supplies to Mir, including a new air conditioner.
Flight controllers struggled briefly and the crew lost some sleep late

Sunday, when an erroneous sensor reading showed a leak on one of *Endeavour's* reaction control system jets. It was shortly determined that the sensor showing the leak was faulty and onboard monitoring of the affected jet could be managed with a software change, which required full testing in JSC's Shuttle Avionics Integration Laboratory. Following the sensor failure, Mission Control asked Russian controllers to let Mir maintain attitude control for the joined spacecraft.
Not long after the handover of control, however, Russian engineers monitoring Mir determined that the space station was low on thruster fuel in its outboard "boom" thrusters. Flight

controllers in the U.S. and Russia worked together and decided that, with good communications contact, Mission Control could watch *Endeavour's* thruster and the shuttle could resume control. The ground had to awaken Wilcutt, Edwards, Solovyev and Vinogradov to make the switch back, which took only a few minutes.
Endeavour and its seven astronauts streaked into orbit on time at 8:48 a.m. CST Jan. 22 from Kennedy Space Center's Launch Pad 39A.
Landing was set for 4:36 p.m. CST Jan. 31. If the mission concludes on time, the crew is expected to return to Houston and a welcome home ceremony outside Hangar 990 at Ellington Field about 4 p.m. CST Sunday.

Station's first element heading for launch site

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Station is 1998. This is something that all of us have looked forward to for a very long time. We have a lot of exciting and challenging activities ahead as we begin our assembly in orbit. The incredible efforts of a worldwide engineering and development team will be coming to fruition, and a new, unprecedented phase of space construction will begin."
The FGB was built by Khrunichev under contract to Boeing, NASA's prime contractor for the station. Manufacturing began in 1994 and was essentially completed in November 1997. However a slip in the shuttle launch schedule delayed the date by seven months, during which time Khrunichev added enhancements to the FGB making it

a more robust module and providing additional backup capabilities for the early International Space Station.
"We are moving from vision and imagination to one of tangible hardware on orbit," said Royce Mitchell, Boeing ISS vice president and deputy program manager. "The FGB team - NASA, RSA (Russian Space Agency), Boeing and Khrunichev — is a symbol of international success. They have overcome distance, language and cultural barriers to design, develop and deliver space flight hardware."
The late June launch of the control module will provide the initial propulsion and power for the International Space Station and begin the five-year, 45-flight orbital assembly of the station. As assembly

continues, the control module will provide orbital control, communications and power for the second piece of the station, a connecting module, Node 1, that will be launched in July. The control module will control the motion and maintain the altitude of the station's orbit. During the initial construction phase, the control module will generate and distribute electrical power and provide ground communications. In the later phases of ISS assembly, the control module will primarily provide storage capacity. In addition, its external fuel tanks will be used throughout the lifetime of the station.
Shortly after the control module is launched from Russia, *Endeavour* will launch on STS-88 from Kennedy Space Center, with Node-1(built by

Boeing at NASA's Marshall Space Flight Center). The node was shipped to Kennedy to begin a year of launch preparations and final testing in June 1997. Two mating adapters, also built by Boeing, have since been shipped to Kennedy from California and are being attached to the node prior to its launch.
Endeavour's crew will dock the control module to the node and perform three spacewalks to make the final connections between the two components during the 11-day flight.
The station then will await the launch of the Russian-built Service Module, a component that will become the early living quarters, targeted for December. The first crew of the station is planned for launch on a mission in early 1999.



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